

dentes cardinales minuti, in utrinque valvulæ duo, divergentes, laterales nulli.

Diam. antero-post. 18, umbono-marg. 10 mm.

*Hab.* Awaji.

A white iridescent shell of very simple character, concentrically rather sharply and closely striated.

EXPLANATION OF PLATE II.

- Fig. 1.* *Turbo excellens.*  
*Fig. 2.* *Nerita lævilirata.*  
*Fig. 3.* *Natica ovata.*  
*Fig. 4.* *Gibbula awajiensis.*  
*Fig. 5.* *Leptothyra lævigata.*  
*Fig. 6.* *Natica figurata.*  
*Fig. 7.* — *bibalveata.*  
*Fig. 8.* *Fissuridea elaborata.*  
*Fig. 9.* *Solarium acutissimum.*  
*Fig. 10.* *Lima oshimensis.*  
*Fig. 11.* *Macoma awajiensis.*  
*Fig. 12.* *Turritella fortilirata.*  
*Fig. 13.* *Eutrochus pulcherrimus.*  
*Fig. 14.* *Dolium pyriforme.*  
*Fig. 15.* *Pluccanomia radiata.*

VI.—*Descriptions and Records of Bees.*—LXI.  
 By T. D. A. COCKERELL, University of Colorado.

*Anthoglossa dives*, sp. n.

♀.—Length about 16 mm.

Robust, black, the apical margins of the first four abdominal segments broadly banded with golden, thinly beset with short golden hair; head broad; clypeus smooth, with very few scattered punctures, more than its lower half, as well as the labrum and the basal two-thirds of the mandibles, clear ferruginous; cheeks with very long white hair, faintly tinged with fulvous beneath; front and face with light fulvous hair, more or less tinged with fuscous, the appressed hair at lower corners of face white; vertex with fuscous hair, but occiput with fulvous; scape black, flagellum largely dark chestnut-red beneath; mesothorax dull, scutellum shining in middle, both covered with short moss-like hair, reddish tipped with fuscous; area of metathorax triangular, dull, with a median sulcus; metathorax with abundant greyish-white hair; pleura with greyish-white hair posteriorly, anteriorly with reddish tipped with fuscous; tegulæ pellucid shining rufous (reddish-amber).

Wings short, strongly infuscated, stigma obsolete, nervures fuscous; b. n. falling just short of t.-m.; second s.m. very wide, receiving first r. n. a little before middle; anterior femora black, red above apically, and largely beneath, the posterior fringe of hair orange-fulvous; middle femora similarly coloured, but posterior fringe snow-white; hind femora black, with a long curled pale fulvous plumose scopa, and bright red hair at apex; tibiae and tarsi red (anterior and middle tibiae more or less suffused with blackish on outer side), with red hair; scopa of hind tibiae light golden red in front, much darker above; hind basitarsi broad. Abdomen black with four golden bands, the heavy fringe of hair on fifth segment rather dark rich red; apical plate truncate.

♂.—Length 16 mm.

Differs from ♀ thus: face densely covered with very bright golden-fulvous (very red) hair; the prominent clypeus yellowish suffused with reddish, with a dusky spot on each side; hair of cheeks below prolonged on each side into a long pale fulvous beard; hair of vertex and occiput long and red; scape short, red; flagellum long, bright ferruginous beneath, the last joint enlarged and flattened, discoid, pallid, with a large black spot; third antennal joint deformed, excavated in front and swollen behind; hair of thorax above longer, long on scutellum, the general effect mouse-grey; hind tibiae and basitarsi slender and elongated, the tibiae arched basally; abdomen with five broad golden bands; apex ferruginous.

*Hab.* Yallingup, near Cape Naturaliste, S.W. Australia, Sept. 14–Oct. 31, 1913 (*R. E. Turner*). 1 ♀ (type); 2 ♂. British Museum.

Close to *A. aureotincta* and *A. hackeri*; the females of the three are separated as follows:—

- |   |                            |
|---|----------------------------|
| First abdominal segment without a golden band.. | <i>hackeri</i> , Ckll.     |
| First abdominal segment with a golden band....  | 1.                         |
| 1. Legs black: size smaller (13 mm.) .....      | <i>aureotincta</i> , Ckll. |
| Legs largely red; size larger (16 mm.) .....    | <i>dives</i> , Ckll.       |

*Paracolletes callurus*, sp. n.

♀.—Length 10 mm.

Black, with the last two abdominal segments densely covered with bright ferruginous hair; hair of face, lower part of front, cheeks, thorax above anteriorly, tubercles, pleura, metathorax, and a tuft at each side of scutellum rather dull white; vertex and disc of thorax, including scutellum, with black hair; head broad, eyes converging below; mandibles with a red subapical spot; clypeus densely and strongly punctured, the lower middle shining and little punctured;

front closely punctured; flagellum very short, dull reddish beneath except at base; mesothorax and scutellum closely and finely punctured, but shining between the punctures; scutellum flattened in middle; postscutellum with a well-developed median tubercle, more or less hidden by hair; tegulae black, with very fine punctures. Wings strongly dusky, with piceous nervures and small stigma; b. n. meeting t.-m.; second s.m. small, receiving first r. n. about middle; second r. n. entering third s.m. some distance from end. Legs black, with white hair, more or less fulvous-tinted on inner side of tarsi; hind tibial scopa long and black behind, otherwise clear white; hind spur pectinate with many fine teeth. Abdomen very finely punctured, with thin white hair, thin and reddish on apical part of fourth segment, dense and bright red beyond.

*Hab.* Yallingup, near Cape Naturaliste, S.W. Australia, Sept. 14–Oct. 31, 1913 (*R. E. Turner*). 2 ♀. British Museum.

Mr. Meade-Waldo notes: "Nearly allied to *P. turneri* and *P. elegans*, but distinct." It is readily distinguished from these by the black abdomen.

#### *Paracolletes dentiger*, Cockerell.

Described in 1910 from a single female, precise locality unknown. At Yallingup, near Cape Naturaliste, Sept. 14–Oct. 31, 1913, Mr. R. E. Turner collected both sexes. To the description of the female should be added—hind tibiae with black hair posteriorly. The male closely resembles the female; the hind legs are long and slender, with the tibial hair all white; the scape is strongly punctured, and the flagellum is short, like that of a female.

In the descriptions of *Paracolletes* which follow, the published tables are referred to by numbers, as follows:—  
Tab. 1 = Trans. Amer. Ent. Soc. xxxi. (1905) pp. 344–348.  
Tab. 2 = Ann. & Mag. Nat. Hist., Jan. 1906, pp. 28–29.  
Tab. 3 = Trans. Amer. Ent. Soc. xxxvi. (1910) pp. 206–207.

#### *Paracolletes latifrons*, sp. n.

♀.—Length about  $11\frac{1}{2}$  mm.

Black, robust, very broad, with rather thin dull white hair; vertex with long black hair, posterior middle of mesothorax, and disc of scutellum, with short black hair; face very broad, eyes slightly converging above, hair of face entirely white; mandibles rufous except at base and apex; flagellum very obscurely reddish beneath; cheeks narrow; mesothorax and scutellum with a dullish, sericeous surface; area of meta-

thorax dullish, overlapped by hair; a broad vertical band of black hair on anterior part of pleura, descending from tegulae; tegulae piceous, with two dark rufous spots. Wings dilute fuliginous, the rudimentary stigma reddish, the nervures fuscous; b. n. falling a little short of t.-m.; second s.m. very broad, receiving first r. n. in middle; second r. n. joining third s.m. some distance before end. Legs black, with black and white hair, light brown on inner side of tarsi; hair on outer face of hind tibiae black; hind spur finely pectinate. Abdomen broad, dullish, with a sericeous surface, and exceedingly minute punctures; third and following segments more shining than the first two, abruptly contrasting; sides and base of abdomen with more or less short silvery hair, which extends to form partial thin bands on sides of second to fourth segments, on fourth quite well developed; fifth segment covered with pale grey hair, white at sides.

*Hab.* Coolangatta, Queensland, 11. 9. 13 (Queensl. Mus. 104).

In Tab. 1 runs straight to *P. obscurus*, Sm., but very distinct by sculpture and pubescence. In Tab. 2 runs to *P. rudis*, Ckll., but not closely related. In Tab. 3 to *P. argentiifrons*, Sm., which differs in venation &c. Its nearest relative is probably *P. advena* (Sm.), which has a narrower abdomen with more distinct hair-bands.

#### *Paracolletes thornleighensis*, Cockerell.

Hitherto known only from the male, but a female from Brisbane, 2. 12. 13 (*Hacker*; Queensl. Mus. 103), is referred here with confidence. It has the stigma and nervures piceous, which may indicate a distinct variety or race. In Tab. 1 it runs near *P. nanus*, Sm., but is much larger. The abdomen is shining black, with slight metallic tints on the third segment; hind margins of segments 2 to 4 broadly rufous, 4 with a band of reddish-golden hair: second segment very distinctly punctured; hind spur long-pectinate; hind tibial scopa black on basal half on outer side, suffusedly blackish beyond; face broad; clypeus shining, well punctured; tongue normally colletiform; hair of face greyish white, of vertex black; mesothorax shining, sparsely and weakly punctured, with black hair except in front.

#### *Paracolletes tenuicinctus*, sp. n.

♀.—Length  $12\frac{1}{2}$ –13 mm.

Very broad and robust; black, with black and white hair: head very broad: mandibles obscurely reddish

apically; clypeus very densely and strongly punctured, covered (but not thickly enough to hide surface) with pale brownish-tinted hair; cheeks, sides of face, and most of front with long white hair, but sides of front above with black hair; flagellum dark, but ferruginous beneath at apex; hair of thorax largely white, white also on occiput, but long and black on vertex; black on mesothorax, except the broad anterior border, and narrow lateral margins, and an admixture of white posteriorly; long black hair on scutellum, with white intermixed, black below tegulæ, and a large dark fuscous patch on under side of thorax: mesothorax and scutellum dull, with rather weak punctures; area of metathorax triangular, dullish; tegulæ black. Wings moderately dusky, darker in apical region; the very small stigma and nervures fuscous; b. n. falling just short of t.-m.; second s.m. very broad, receiving first r. n. a little before the middle; third s.m. receiving second r. n. a short distance before end. Legs black, the anterior tibiæ red in front, and the small joints of tarsi red: hair of legs mostly white, but pale yellowish brown on inner edge of tarsi, mainly fuscous on outer side of basitarsi and of anterior and middle tibiæ, but the loose tibial scopa of hind legs clear white, except at extreme base above; hind spur with such short and minute pectinations as to appear simple under a lens. Abdomen broad, without distinct punctures: hind margins of first four segments with very narrow white hair-bands; hair at apex black, white hair at sides of fifth segment; venter with light hair-bands.

*Hab.* Yallingup, S.W. Australia, Sept. 14–Oct. 31, 1913, 3 ♀ (*R. E. Turner*). British Museum.

Closely allied to *P. advena* (Sm.), but larger and broader, with white hind tibial scopa. In Tab. 1 it could run near to *P. argentifrons*, which is quite different, or to *P. obscurus*, from which it differs by the large size and abdominal bands. In Tab. 2 it runs nearest to *P. hobartensis*, which has no abdominal hair-bands. In Tab. 3 it runs to *P. argentifrons*.

*Paracolletes sexmaculatus*, sp. n.

♀.—Length 13–14 mm.

Robust; head, thorax, and legs black; abdomen dark but very distinct bluish green, with six very conspicuous though not large transversely elongated patches of pure white hair, on lateral hind margins of segments 2 to 4: the heavy apical fimbria black; head broad; mandibles black, very faintly reddish subapically, with a single inner tooth; clypeus shining, strongly punctured; flagellum dull red beneath apically; face and cheeks with glittering white hair; on lower part

of front it is long and white, faintly tinged with yellowish, on upper part of front and on vertex it is black; mesothorax shining, with shallow punctures, scutellum rougher; postscutellum with a mammiform median tubercle; area of metathorax brilliantly shining, not carinate, margined by a finely beaded groove; hair of thorax mostly dull white, but black on discs of mesothorax and scutellum, and a black patch beneath the wings, just behind the tubercles; tubercle of postscutellum with hairs partly dark; tegulae black. Wings dusky, nervures and the lanceolate stigma dark reddish brown; b. n. meeting t.-m.; first r. n. joining second s.m. much before middle; second r. n. joining third s.m. near or at end. Hair of legs black or fuscous on outer side of tibiae and tarsi, otherwise white, but yellowish on inner side of basitarsi (fulvous on anterior pair); hind spur with very slender long spines. Abdomen shining, weakly punctured; venter with white hair.

♂.—Length 11–12 mm.

Much more slender, with the light hair of head and thorax pale fulvous, brightest on face; flagellum very thick, with angular joints, suggesting ibex-horns; tubercle on postscutellum small and inconspicuous. Knees, all the tarsi, tibiae at apex, and anterior tibiae in front, clear red. Abdomen only very feebly metallic, and wholly without the spots of white hair; apical plate broadly rounded, subtruncate.

*Hab.* Yallingup, S.W. Australia, Sept. 14–Oct. 31, 1913. 2 ♀, 5 ♂ (*R. E. Turner*). British Museum.

The female is the type; the sexes were sent associated, otherwise I should have hesitated to put them together, as they look very different. They agree, however, in venation, metathorax, &c. The male, by its antennae, resembles the much smaller *P. ibex*, Ckll. The female in Tab. 1 runs near *P. providus*, and may be compared also with *P. frontalis*; in Tab. 2 it runs out near *P. obscuripennis*; in Tab. 3 it runs to *providus*. It is very different from all of these. The male in Tab. 1 runs out at 7 if the abdomen is considered metallic; otherwise it goes near the quite distinct *P. chalybeatus*. In Tab. 2 it runs rather near *obscuripennis* and *subfuscus*; and in Tab. 3 near *providus*.

*Paracolletes metallescens*, sp. n.

♀.—Length about 11 mm.

Rather slender, black, the abdomen very dark bluish green; head broad; mandibles black, obscurely red apically; malar space linear; clypeus shining, with distinct, not very

dense punctures; antennæ black, with the flagellum bright ferruginous beneath apically; hair of cheeks white, of face white intermixed with black on clypeus, vertex and upper part of front with long black hair; mesothorax and scutellum brilliantly shining, with irregular shallow punctures; post-scutellum without a process; area of metathorax smooth and shining, with an obtuse transverse ridge; hair of thorax dull white, black on discs of mesothorax and scutellum, and a patch of black under the wings; tegulæ piceous. Wings dusky, the lanceolate stigma rufo-piceous, nervures fuscous; b. n. falling just short of t.-m.; second s.m. receiving first r. n. about middle; third s.m. receiving second r. n. some distance before end. Legs black, tarsi red at extreme apex; hair of legs largely white, but orange-fulvous on inner side of anterior tarsi, yellowish-tinted on inner side of hind tarsi, black or fuscous on outer side of tibiæ and tarsi; spurs pallid. Abdomen moderately shining, but with a sericeous surface, without distinct punctures or hair-bands; apical fimbria black; venter with much white hair.

♂ —Length about 9 mm.

Face covered with white hair; mandibles bright red sub-apically; flagellum dark, rather obscure red at apex, very strongly crenulated beneath; hair of mesothorax long, white in front, posteriorly grey or rather dilute black; scutellum with black hair. Legs black, tarsi red at extreme apex. Abdomen very dark bluish or blue-black, hind margins of segments obscurely reddish; apical plate broadly rounded, subtruncate.

*Hab.* Yallingup, S.W. Australia, Sept. 14–Oct. 31, 1913, 2 ♀, 1 ♂ (*R. E. Turner*). British Museum.

Apparently very close to *P. versicolor*, Sm., but differing by the darker abdomen, with pure white instead of yellow hair beneath. The male is allied to *P. ibex*, Ckll. *P. providus* has the abdomen bluer and more shining. The type of *P. metallescens* is a female.

*Paracolletes subvigilans*, sp. n.

♀.—Length 13½–14 mm.

Rather robust, with the abdomen dark yellowish or bluish green, the discs of the segments sometimes almost black, but the broad hind margins always green; head broad; mandibles dark; clypeus shining, strongly punctured; hair of cheeks and face (abundant in region of antennæ) white, but face with some fuscous hairs intermixed; hair of front and vertex black; antennæ dark, flagellum dull red beneath at apex; hair of

thorax largely dull white, but black on discs of mesothorax and scutellum, and a large black patch below wings; hair at sides of metathorax stained with fuscous; mesothorax and scutellum brilliantly shining, with irregularly placed shallow punctures; scutellum with a median sulcus; postscutellum with a very prominent obtuse tubercle, which is not bifid; area of metathorax triangular, shining, minutely striate on upper middle, somewhat bulging transversely, but not carinate; at sides of area the usual beaded impressed line expands, forming a series of elongate pits; tegulæ piceous. Wings brownish, nervures and the small lanceolate stigma rufo-piceous; b. n. meeting t.-m.; first r. n. joining second s.m. near end of first third; second r. n. joining third s.m. a short distance from end; tibiæ and tarsi with fuscous hair on outer side; hair on inner side of hind basitarsi grey; hind femora with a curled scopa of silvery-white hair. Abdomen with very little hair, and no bands or spots; punctures scattered and extremely minute; caudal fimbria black; venter with white hair.

*Hab.* Yallingup, S.W. Australia, Sept. 14–Oct. 31, 1913, 3 ♀ (*R. E. Turner*). British Museum.

Structurally very close to *P. sexmaculatus*, though that has a shorter process on postscutellum and a much more closely distinctly and punctured abdomen. Mr. Meade-Waldo notes: "Near *P. vigilans*, Sm., which we have from same locality." In *P. vigilans* the process on postscutellum is bidentate.

*Paracolletes rhodopus*, sp. n.

♀.—Length a little over 13 mm.

Rather robust, black; hind tibiæ bright ferruginous, with hair of the same colour on its outer side, and on inner paler and yellower; hind tarsi red, end of basitarsus and beyond suffused with dusky; anterior and middle tibiæ and tarsi black, with the last tarsal joint red; hair of head and thorax abundant, black in the same places as in *P. subvigilans*, otherwise pale ochreous-tinted; mandibles dark; clypeus shining, strongly punctured; antennæ black, reddish beneath at apex; scape long, flagellum short; mesothorax and scutellum shining, rather well punctured; postscutellum with a rather low conical process; area of metathorax shining, more or less transversely striate, slightly elevated in the middle, but not keeled; inner surface of basitarsi with bright red hair; anterior tarsi with fuscous hair on outer side, but middle with red; tegulæ black anteriorly, red posteriorly. Wings dusky, nervures and the lanceolate stigma dark rufo-fuscous;



b. n. meeting t.-m. ; first r. n. joining second s.m. much before middle ; second r. n. joining third s.m. very near end. Abdomen shining but rather roughened, especially the second segment, the punctures extremely minute ; very thin pale ochreous hair, thicker at lateral apices of segments 2 to 4, forming rudimentary, very inconspicuous bands ; apical fimbria black ; venter with pale ochreous hair.

*Hab.* Yallingup, S.W. Australia, Sept. 11–Oct. 31, 1913 (*R. E. Turner*). British Museum.

Structurally allied to *P. subvigilans* and related species, but unique by the peculiar coloration of the legs.

*Paracolletes bicolor* (Smith).

This species appears to be variable (see *Trans. Amer. Ent. Soc.* xxxvi. p. 201), and I cannot separate a couple of males taken by Turner at Yallingup, although they have the mesothorax entirely green, the colour not at all "obscure." The tibiæ and tarsi are red, the tibiæ are more or less suffused with dusky. *P. plumosus*, Sm., has similar colours, and is very closely allied.

*Paracolletes fimbriatinus hillieri*, subsp. n.

♂.—Like *P. fimbriatinus*, Ckll., but smaller, length about 8 mm. ; hair of head and thorax cream-colour ; flagellum bright ferruginous above and beneath ; abdomen more shining and less densely punctured, the hair on apical margins of segments wholly pale ; femora black except at apex.

*Hab.* Hermannsburg, Central Australia (*H. J. Hillier*). British Museum.

Apparently a desert representative of *P. fimbriatinus*.

*Paracolletes bimaculatus* (Smith).

A single small male from Yallingup (*R. E. Turner*) is referred to this species, which appears to be somewhat variable. The abdominal segments are transversely clouded with dusky, and the round black spots at sides of second segment are small. The second s.m. is remarkably small and narrow. Smith described this species from the female.

*Paracolletes castaneipes*, sp. n.

♂.—Length about 10 mm.

Black, not at all metallic, the tibiæ and tarsi deep chestnut-

red, the tarsi more or less stained with black; mandibles with an obscure red mark subapically; flagellum long, but ordinary in form, dark coffee-brown beneath, redder at apex; clypeus finely and closely punctured, supraelypeal area elevated, shining; front dull; face and cheeks with shining silvery hair; on front the thin long hair is dull white, but on vertex it is fuscous, contrasting with the shining white of the occiput; hair of thorax white, except on disc of mesothorax and scutellum, where it is fuscous; prothorax shining, but mesothorax and scutellum appearing granular, somewhat glistening; the mesothorax under the compound microscope shows small punctures as closely placed as possible, the narrow margins between not tessellate; postscutellum without a process; area of metathorax glistening but minutely sculptured, somewhat bulging transversely in the middle, but not earinate; tegulae rufo-piceous. Wings dusky, the nervures and the narrowly lanceolate stigma dark rufo-piceous; b. u. falling a little short of t.-m.; second s.m. narrowed above, with sloping sides, receiving first r. n. much before middle; third s.m. receiving second r. n. some distance from end. Legs with glistening white hair; hind basitarsus with a projection on anterior side near base. Abdomen with hind margins of second and following segments narrowly reddish; no hair-bands; hair at apex pale chocolate; venter with white hair-bands. The abdomen is described as non-metallic, and yet in certain lights it seems to have an elusive, hardly appreciable greyish tint.

*Hab.* Yallingup, S.W. Australia, Sept. 14–Oct. 31, 1913 (R. E. Turner). 2 ♂. British Museum.

Apparently related to *P. rudis*, Ckll., but not its male, as the sculpture of the mesothorax is entirely different.

*Paracolletes atronitens*, sp. n.

♂.—Length 10 mm. or slightly over.

Shining black, not at all metallic, with white hair, long on head and thorax, but on vertex, and discs of mesothorax and scutellum, it is black, and there is a blackish stain just beneath the tegulae; head broad; mandibles rufescent at apex; clypeus shining, with rather close moderate-sized punctures; sides of vertex brilliantly shining, but front dullish; flagellum wholly dark, long and thick, the joints of the apical half swollen (but not angular) beneath; mesothorax brilliantly shining, with sparse feeble punctures; scutellum shining in front, otherwise rough and punctured; postscutellum without a process; area of metathorax peculiar, with a basal depressed trans-

versely striated band, limited by a transverse ridge, below which the (vertical) surface is shining except at sides, but in the middle, at the top of the vertical face, is a large deep triangular pit; tegulae piceous. Wings slightly dusky, nervures and the lanceolate stigma rufo-fuscous; b. n. meeting t.-m.; second s.m. broad, receiving first r. n. at or before middle; third s.m. receiving second r. n. not very far from end. Legs with glistening white hair, pale reddish on inner side of tarsi. Abdomen shining, the weak punctures not dense; hind margins of second and following segments very narrowly reddish; no hair-bands; hair at apex fuscous; venter with pure white hair.

*Hab.* Yallingup, S.W. Australia, Sept. 14–Oct. 31, 1913, 2 ♂ (*R. E. Turner*). British Museum.

Related to *P. chalybeatus* and *P. obscurus*, but differing in various details. The metathorax is peculiar.

VII.—*Descriptions and Records of Bees.*—LXII.  
By T. D. A. COCKERELL, University of Colorado.

*Parasphcodes excultus*, Cockerell.

Mt. Wellington, S. Tasmania, Jan. 15–Feb. 6, 1913 (*R. E. Turner*). Brit. Museum.

*Parasphcodes wellingtoni*, sp. n.

♀.—Length  $8\frac{1}{2}$ – $10\frac{1}{2}$  mm.

Robust; head and thorax black; abdomen bright chestnut-red, first segment black or blackish at base, the limits of the dark patch not sharply defined, apical segments variably suffused with dusky; clypeus shining, more or less flattened or depressed in middle, very sparsely punctured; face glistening, but not smooth; front dull, more or less glistening at sides; the very scanty pale hair of face and cheeks more or less brownish; antennæ black, flagellum obscurely brown beneath; vertex, mesothorax, and scutellum with thin dark reddish-fuscous hair; fringe of tubercles pale ochreous; mesothorax strongly grooved in middle, dull in front, shining on disc, with small punctures of two different sizes; scutellum shining, with scattered minute punctures; postscutellum entirely dull, strongly contrasting with scutellum; area of